

WHAT IS CLAIMED IS:

1. 1. A liquid ejection apparatus, comprising:
  2. a liquid ejection head, comprising:
    3. a nozzle orifice communicated with a pressure chamber; and
    4. a pressure generating element, which generates pressure fluctuation in liquid which is contained in the pressure chamber;
    5. a drive signal generator, which generates a drive signal containing, within one cycle thereof:
      6. a first drive subsignal, containing a plurality of first drive pulses each of which drives the pressure generating element to generate the pressure fluctuation so as to eject the liquid from the nozzle orifice, and a second drive pulse which drives the pressure generating element to generate the pressure fluctuation so as not to eject the liquid from the nozzle orifice; and
      7. at least one second drive subsignal, containing only the first drive pulses; and
    8. a pulse supplier, which selectively supplies at least one of the first drive pulses and the second drive pulse to the pressure generating element, in accordance with an amount of the liquid to be ejected from the nozzle orifice,
      9. wherein each of the first drive subsignal and the second drive subsignal is associated with a minimum area subjected to the liquid ejection.
1. 2. The liquid ejection apparatus as set forth in claim 1, wherein all of the first drive pulses have an identical waveform.

1       3.     The liquid ejection apparatus as set forth in claim 1, wherein the  
2     second drive subsignal is arranged at the beginning of the one cycle of the  
3     drive signal.

1       4.     The liquid ejection apparatus as set forth in claim 1, wherein:  
2           each of the first drive pulses and the second pulse is designated by  
3     one of pulse selection data processed in the pulse supplier; and  
4           the number of the pulse selection data for the first drive subsignal and  
5     the number of the pulse selection data for the second drive subsignal are the  
6     same, so that a predetermined potential of the second drive subsignal is  
7     supplied to the pressure generating element by one of the pulse selection data  
8     for the second drive subsignal.

1       5.     The liquid ejection apparatus as set forth in claim 1, wherein:  
2           the drive signal is repetitively generated in accordance with a series  
3     of first timing signals which are generated in the external of the drive signal  
4     generator; and  
5           a duration of the one cycle of the drive signal is less than an interval  
6     of the first timing signals.

1       6.     The liquid ejection apparatus as set forth in claim 5, wherein:  
2           the minimum area is repetitively defined in accordance with a series  
3     of second timing signals which are generated in the external of the drive signal  
4     generator; and  
5           a duration of each of the first drive subsignal and the second drive

6       subsignal is less than an interval of the second timing signals.

1       7.       The liquid ejection apparatus as set forth in claim 1, wherein the first  
2       drive pulses includes a pair of first ejection pulses each for ejecting a liquid  
3       droplet having a first volume, and a second ejection pulse generated between  
4       the first ejection pulses for ejecting a liquid droplet having a second volume  
5       less than the first volume.

1       8.       The liquid ejection apparatus as set forth in claim 1, wherein the first  
2       drive pulses are generated at a fixed interval each for ejecting a liquid droplet  
3       having a fixed volume.

1       9.       A method of controlling a liquid ejection apparatus which comprises a  
2       liquid ejection head provided with: a nozzle orifice communicated with a  
3       pressure chamber; and a pressure generating element, which generates  
4       pressure fluctuation in liquid which is contained in the pressure chamber, the  
5       method comprising steps of:

6               generating a drive signal containing, within one cycle thereof:  
7                       a first drive subsignal, containing a plurality of first drive pulses  
8                       each of which drives the pressure generating element to generate the pressure  
9                       fluctuation so as to eject the liquid from the nozzle orifice, and a second drive  
10                  pulse which drives the pressure generating element to generate the pressure  
11                  fluctuation so as not to eject the liquid from the nozzle orifice; and  
12                  at least one second drive subsignal, containing only the first drive  
13                  pulses; and

14           supplying selectively at least one of the first drive pulses and the  
15   second drive pulse to the pressure generating element, in accordance with an  
16   amount of the liquid to be ejected from the nozzle orifice,

17           wherein each of the first drive subsignal and the second drive  
18   subsignal is associated with a minimum area subjected to the liquid ejection.